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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,342	12/05/2003	Zhidan Li Tolt	nanogate120303	1341
40051	7590	04/06/2005	EXAMINER	
ZHIDAN LI TOLT 4018 ELLMAR OARS DR. SAN JOSE, CA 95136			FENTY, JESSE A	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,342

Applicant(s)

TOLT, ZHIDAN LI

Examiner

Jesse A. Fenty

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 24-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 14-16, 18 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 11-13, 17, 19 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/05/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-23 in the reply filed on 01/13/05 is acknowledged. The traversal is on the ground(s) that the emitter nanostructures could only be made by the CMP method the only way to truncate the surface of the emitter nanostructure is by polishing. This is not found persuasive because several other ways of truncating emitter nanostructures are known in the art, for example, one method disclosed by Choi (U.S. Patent No. 6,538,367 B1) discloses that the ends of the nanostructures can be further trimmed by, e.g. using a hot blade and spacer or using a laser beam to create aligned nanotube ends with equal height to further optimize the emission properties (Choi; column 5, lines 13-17).

Therefore, the requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-10, 14-16, 18 and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi et al. (U.S. Patent No. 6,538,367 B1).

In re claims 1 and 20, Choi (esp. Figs. 10-11, 17) discloses an emission electron source comprising:

a first cathode electrode (11) disposed on a substrate (141), the cathode electrode for providing a source of electrons;

an emitter layer (10) being disposed over the said cathode electrode and formed from a composition of an embedding material and one or a plurality of vertically oriented and mono-dispersed nano-structures embedded therein, the emitter layer having a surface, parallel to which the nano-structures are truncated to substantially the same length and above the surface the nano-structures protrude for emitting electrons;

an insulator (104) disposed over the emitter layer, the insulator having one or a plurality of apertures, each is aligned with and exposes one nano-structure in the emitter layer;

a second gate electrode (101) disposed over the insulator and having one or a plurality of apertures aligned with the apertures in the insulator, the gate electrode for controlling the emission of electrons through the apertures from the exposed nano-structures (column 7, lines 57-63); and

an anode plate including a transparent anode electrode (102) disposed over a glass substrate and a phosphor screen (171) disposed over the anode electrode, and being positioned opposite to said electron source with a vacuum gap put therebetween.

The limitation, “whereby electrons are emitted ... said phosphor screen” recites the intended use of the claimed device. Terms that simply set forth the intended use, a property inherent in or a function, do not differentiate the claimed composition of these elements from those known to prior art.

In re claims 2 and 21, Choi discloses the devices of claims 1 and 20 respectively, wherein the gate aperture has a size substantially less than one micron (column 8, lines 6-9).

In re claims 3 and 22, Choi discloses the devices of claims 1 and 20 respectively, wherein the nano-structures have a surface density substantially higher than 10^6cm^2 (column 12, lines 28-30).

In re claims 4 and 5, Choi discloses the device of claim 1. The limitation, “wherein the mask includes membranes formed from ... as a mask” refers to the process used for making this product and does not further differentiate the structure of the claim from the prior art.

In re claim 6, Choi discloses the device of claim 1, wherein the nano-structures include nano-tubes and nano-wires (column 2, lines 34-37).

In re claim 7, Choi discloses the device of claim 1. The limitation, “wherein the nano-structures are pre-fabricated ... process” refers to the process used for making this product and does not further differentiate the structure of the claim from the prior art.

In re claim 8, Choi discloses the device of claim 1, wherein the nano-structures (10) are conductive (disclosed by Choi as “nanoconductors”) and the embedding material (11a) is non-conductive (porous silica, column 6, lines 61-62).

In re claim 9, Choi discloses the device of claim 8, wherein the nano-structures are carbon (claim 2).

In re claim 10, Choi discloses the device of claim 8, wherein the carbon includes a carbon nano-tube (claim 2).

In re claims 14 and 15, Choi discloses the device of claim 1, wherein the nano-structures are non-conductive (diamond; column 2, lines 22-29); and wherein the embedding material (11) is conductive (column 6, lines 42-43).

In re claims 16 and 18, Choi discloses the device of claim 1. The limitation, “wherein the nano-structures are truncated by CMP” and “wherein the nano-structures are grown ... material” refer to the process for making this product and does not further distinguish over the structure of the prior art. Applicant is reminded that, a product by process claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a product by process claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in a product by process claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear.

Allowable Subject Matter

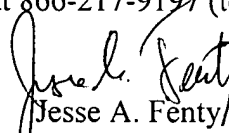
3. Claims 11-13, 17, 19 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jesse A. Fenty
Examiner
Art Unit 2815